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THE

West American Scientist.

A popular monthly review and record for the Pacific Coast.

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A CACTUS CORNER IN THE MISSOURI BOTANICAL GARDEN.

The garden maintained for many years in the private grounds of the late Henry Shaw, at St. Louis, is known to most people who have passed through that city, and few people traveling for pleasure have stopped there for a day without a visit to Shaw's Garden. At the death of Henry Shaw, in 1889, this garden was left in the care of a board of trustees, to be maintained as a botanical garden, and is endowed with practically the whole of his large fortune.

The accompanying view is from the first report on the garden under the management of the trustees, and represents one of the several groups of large cacti which are set out during the summer. Many of the specimens of Opuntia and Cereus are large and old plants, and possess historical interest for students of this group of succulents, since they came originally from Prince Salm Dyck, one of the greatest authorities on the cacti, and were closely observed by Dr. Engelmann, whose studies laid the foundation for the knowledge of our own species. The collection in this group is believed to be one of the largest and most complete in existence, and the library and herbarium of the garden are also very rich in material referring to the cacti. The managers desire that every species of cactus growing in the United States, as well as Mexican species, shall be represented in the near future. For botanical study, as well as popular observation, St. Louis is likely for some time to come to be the cactus center of the country.

In Southern California, however, the cactus is more at home, and the Arizona garden at Monterey famous among travelers. A large private collection is at Pasadena, comprising about two or three hundred species, and is in thriving condition. The proprietors of the Hotel del Coronado planted about five hundred varieties, furnished by the writer, who has personally collected, or received from correspondents, more than half the varieties as yet known to botanists. Nearly twelve hundred species have been described, of which many will doubtless have to be, ultimately, referred to synonymy.

The writer has recently added nearly two hundred species to his collections, including some new and many rare ones from Mexico and other localities, and hopes ultimately to have the most complete private collection in the world. *C. R. Orcutt.*

APRIL FLOWERS IN NORTHERN CALIFORNIA.

(From *Garden and Forest*, iv. 214.)

The middle of April, in California, north of San Francisco bay, finds the wild flowers, in hundreds of species, and often in vast quantities, covering acres on acres of ground. As yet the height of

the season is not reached. The San Joaquin valley and Monterey are fully three weeks earlier, and Southern California earlier still. A month ago our common Buttercups, Ranunculus macranthus, were few in numbers; now the roadsides are yellow with them, and pastures are covered with them by the acre. In wet places R. Bloomeri takes its place with equal profusion. Yellow seems a favorite color here, and it is always seen in masses. In places a low-growing Œnothera, in profuse flower, shows the richest of yellows for a long period. Then the Eschscholtzia fairly monopolizes some vacant lots in this town where there is a deep gravelly soil. These beautiful Poppies appear, not in dozens or thousands, but turn whole acres into billowy masses of splendid orange; other acres glow with the darker orange of Amsinckia or the purple-blue of Lupines. The Eschscholtzia foliage is especially rich this season in scarlets and bronzes, which, if they could be relied upon as permanent, would make it an interesting foliage plant.

Nemophilas are largely used by nature as bedding plants here. N. insignis, Blue Eyes we call it, is everywhere in single plants or in beds, a few yards in extent, and occasionally by the solid acre. Gilia tricolor is another plant which now covers entire hillsides. Platystemon Californicus, another member of the poppy family, is also a favorite with nature. The flowers are a creamy yellow, borne separately on long stalks. In dry fields it covers large areas. White is the rarest color in these natural parks. Several species of Eritrichium are here, with delicate, white flowers. Limnanthes Douglasii, long in cultivation, forms large white masses in moist places. Scarlet does not yet appear in abundance, although Calandrinia Menziesii, another cultivated species, is everywhere.

Mendocino county and the region around the base of Mount Shasta have the richest flora in California. The Sierra Nevada range is largely volcanic. In the coast range clays prevail, with here and there volcanic projections. At Shasta these two ranges meet, giving in a small space great variations in soil, altitude, exposure and moisture. The rainiest spot in California is closely adjacent to a lava desert, so at Mount Shasta the conifers have a wonderful development in species, and the flora as a whole is very rich. In Mendocino county the redwood forest furnishes shade and moisture. The dry Chemisal region is close at hand, giving the prevalent flora of the coast range. Elevations of 5,000 to 6,000 feet give alpine conditions, while isolated volcanic points add variety to soil. Add to this narrow valleys and deep canyons, and the variety of vegetation is not to be wondered at.

Among shrubs the various Ceanothus are common, going far to

make up the unbroken growth, from six to fifteen feet high, which, in an almost impenetrable thicket, clothes many of the mountain sides of the coast range, and gives them a smooth, Heath-like appearance. The local name for this low growth is chemisal when the shrub Adenostoma fasciculatum predominates; chapparal, if the growth is largely mixed. In the aggregate vast areas are so covered. One continuous belt is sixty miles long by eight or ten wide, with very small breaks in timber or grazing land. Ceanothus divaricatus is one of the commonest elements of chapparal, and is now in bloom. In the open Redwood C. thyrsiflorus, a fine shrub, often fifteen feet high, with flowers much like a lilac, and fully as beautiful, covers large areas in an almost impenetrable thicket.

In my garden Erythronium grandiflorum is beginning to fade. It gave fine satisfaction this season, planted in chip mold, and rather shallow. E. giganteum, from Oregon, bloomed for the first time this year. The bulbs were strong and produced large blossoms, four to six to each, and several three inches across. Close observation shows some difference between this and E. grandiflorum, but the distinction is not well enough defined to be satisfactory. The yellow of the flowers of E. giganteum has a slight greenish shade, while those of E. grandiflorum shade from light straw at tips to rich yellow near the centre, and occasionally with markings from light brown to very dark. E. Smithii lacks the elegance of form of the two former, and is one-flowered. Its color, at first, is white, with a pink tinge, and becomes pink-purple. E. Howellii has a straw-colored flower with a peculiar pinkish orange centre. With me it was quite small, but the bulbs may not have been strong.

Brodiæa multiflora and B. congesta blossomed together, and very beautiful they were. They were planted in shallow boxes, the top soil mold and clay with a light dressing of sand. The first Calochortus to flower was the dainty little C. cœruleus. It was closely followed by C. lilacinus. The first is doing well in a common clay loam. Fritillaria lanceolata seems to runs to many forms, which, to the gardener, would be good varieties. The prettiest I had this year was a light yellow one. They were in shallow boxes about three inches deep, in clay loam, and shaded in the afternoon. Considering the quality of the bulb the flowers were as good as I have seen in the very best natural wild growth. There is a variety of F. recurva which is unusually fine. Some racemes were sent to me with five to nine blossoms, and I have heard of one with eighteen. *Carl Purdy.*

THE GOLONDRINA PLANT.

(From the San Diego *Union*, revised by the author.)

The rattlesnake is the most abundant and the most dreaded of the venomous reptiles of the United States. The Pacific coast is free from any other variety of known poisonous serpents, but several varieties of the rattlesnake abound in sufficient numbers to make up for the lack of variety otherwise.

Our most venomous and ugly species is the black rattlesnake, (Crotalus lucifer) found near the coast, from Oregon to Lower California, smaller in size than the more common yellow rattler. It is usually found in grassy valleys or canyons, and though smaller in size is much livelier than the other form and not inclined to bear insults without showing fight.

The yellow rattler, or diamond-back, as it is sometimes called, (Crotalus enyo) is much larger, often five, more rarely six feet in length, sluggish, and not inclined to fight if it can avoid conflict, except at certain seasons when it also, is very pugnacious.

In April it is sometimes inclined to attack one, and will not readily run from you, but by June it shows a desire to escape—probably because it is blind and knows itself to be at a disadvantage. Some say it is then more dangerous, as it will strike without warning, which is probably true if it is disturbed. But the current belief that the rattlesnake will always give warning is a dangerous popular fallacy, as such is not the case. It will rattle and strike simultaneously, and often will await your near approach before giving warning. I will give a case to illustrate this point. In May, 1886, near San Quintin bay, I started to climb a steep bank to reach a certain plant growing above me. Just beside it was a large yellow rattler, coiled ready to strike and waiting for its probably expected prey. As I approached it made no motion, but the strong magnetic influence of its eye, as it wickedly watched my approach, caused me to look up just in season, when my head was nearly on a level with its own, and to step back out of danger. Still it did not rattle until a pistol shot gave it its quietus.

In June, 1889, while shaking the seed from the bush into a pan, held near the ground and under the bush, I had the pleasure of seeing a large yellow rattler quietly move from under the bush out of my way, without giving any indication of its presence beforehand. Probably my movement of the bush above it had slightly disturbed the good-natured fellow without arousing his resentment.

Another slim and exceedingly lively rattler, with alternate rings of black and white, is found in our mountains, bordering the desert.

After observing the rapid locomotion of a particularly long individual one day, I considered discretion the better part of valor when it turned upon me and showed fight, especially as I chanced to have no weapon at hand.

On the Colorado desert the rattlesnake closely imitates the color of the sand that surrounds it. The larger one resembles the diamond-back in its markings and is the species known as Crotalus pyrrhus.

The desert region possesses a smaller species (Crotalus cerastes) scarcely a foot in length, white as the sands beneath it, as pugnacious as a terrier among rats, by no means sluggish in the hot sun, but inclined to honorable warfare by giving warning to its approaching enemy. One evening the operator at a station on the Southern Pacific railway stepped into his office with slippers on his feet and quickly stepped out again as he felt and heard one of these reptiles under his foot. The sand-viper, or side-winder, as these diminutive snakes are called by their acquaintances, kept his tail employed in a lively manner until the young man put on his boots, struck a light and dispatched him. On the Mojave desert this snake is exceedingly abundant in some localities. Their nocturnal habits render them especially dangerous where they abound. All the other rattlers, I believe, travel only in the daytime as a rule, when, if one is on the lookout, he can generally avoid unpleasant experiences with them.

Dr. S. Wier Mitchell, of Philadelphia, who has made a special study of venemous serpents, and has studied our rattlesnakes especially, claims there is no sure cure known for the virus of a rattlesnake. There is a popular article in the *Century Magazine* (Vol. 38, pp. 513–514) by this author. I will copy a few sentences.

'When a man or an animal is bitten by a rattlesnake death may take place in a few minutes. It has followed in man within a minute, but unless the dose given is enormous, or by chance enters a vein, this is very unlikely. The bite is, however, popularly believed to be mortal, and therefore every case of recovery gives credit to some remedy, for it is a maxim with physicians that the incurable and easily relievable maladies are those which have the most remedies assigned to them. * * * The deadly apothecary does not succumb to his own drugs. * * * We have never been able to poison plants with snake venom. * * * It is possible to feed a pigeon on crotalus (rattlesnake) venom day after day and see it live unhurt. * * * A bite in the extremities rarely causes death.'

From the above it will be seen that the bite of the rattlesnake is

extremely dangerous but not always fatal. The poison itself has no effect on the rattlesnake, though deadly to other snakes, yet by biting itself in a vital part the snake has power to commit suicide. This has frequently been witnessed and abundantly testified to and given rise to the popular fallacy that it dies from its own poison.

Under normal conditions of health the venom is undoubtedly harmless to the human system if taken internally. Yet such experiments might prove fatal to some individuals or under unfavorable conditions of health.

We will again quote Dr. Mitchell that a clearer view of the subject may be obtained:

'If we mix any venom with a strong enough solution of potassa or soda we destroy its power to kill. A solution of iodine or perchloride has a like but a lesser capacity and so also has bromohydric acid; but by far the best of all is permanganate of potash. If this agent be injected at once or soon through a hollow needle into the fang wound wherever it touches venom it destroys it. It also acts in like destructive fashion on the tissues, but, relatively speaking, this is a small matter. If at once we can cut off the circulation by a ligature and thus delay absorption we certainly lessen the chances of death; yet, as the bites occur usually when men are far from help, it is but too often a futile aid, although it has certainly saved many lives. The first effect of venom is to lessen suddenly the pressure under which the blood is kept while in the vessels. Death from this cause must be rare, as it is active for so short a time. Any alcoholic stimulants at this period would be useful; but, despite the popular creed, it is now pretty sure that many men have been killed by the alcoholism to relieve them from the snake bite, and it is a matter of record that men dead drunk with whisky and then bitten had died of the bite. For the consequences to the blood and to the nerve centers which follow an injection of venom there is, so far as I am aware, no antidote; but as to this I do not at all despair and see clearly that our way to find relief is by competently learning what we have to do. * * * We may hope to find remedies which will stimulate and excite the vital organs which venom enfeebles. In this direction lie our hopes of future help. Anything which delays the fatal effect of the poison is also a vast advantage in treatment.'

GOLONDRINA.

Several cases of rattlesnake bites have been recently described to the writer, where five drops of ammonia taken in a glass of whisky every five minutes several times in succession resulted in relief and a cure. Ammonia and whisky, with sweet oil or any oily substance,

butter or even lard, are the most general popular remedies credited with curing the bites of venomous reptiles or insects. Other remedies, like black ash bark, caustic and bluestone, gunpowder ignited on the wound (in cases of horses or cattle bitten), and many others are often reported as efficacious in the cases where they were applied.

The Euphorbiaceæ or spurge family contains plants and shrubs, usually with a milky, acrid (poisonous) juice. In Euphorbia, the principal genus in America, the flowers are monoecious, included in a cup-shaped, four and five-lobed involucre resembling a calyx or corolla, usually bearing large and thick glands at its sinuses.

In the species to which the name golondrina is usually applied the leaves are small, all opposite and similar, furnished with awl-shaped or scaly stipules; stems and branches usually forming a broad, spreading mat on the ground; annual, usually in blossom throughout the year.

Messrs. Parke, Davis & Co., Detroit (West American Scientist, vol. vi., p. 84), say of these plants:

"We find that several species of Euphorbia, mostly the E. albomarginata and the E. prostrata, have acquired a reputation as antidotes for snake poisoning under the names of 'golondrina' and 'gollindrinera.'

In Southern California Euphorbia polycarpa is the common golondrina of the Mexicans and Indians, and has the reputation of being a sure cure for all cases of venom poisoning, in common with other similar, nearly related species of this genus. It is abundant from the seashore to the Colorado desert, where a larger variety than ours is very abundant.

The *Herald*, of Banning, Cal., Louis Munson, editor, under date of October 12, 1889, contained the following article on the varieties of this plant, which I consider worthy of reproduction:

An article of Dr. S. Wier Mitchell, of Philadelphia, lately widely copied, announced that no sure cure was known for the virus of a rattlesnake. The doctor evidently had not consulted the lore of the Indians of Southern California. Nobody hears of an Indian dying from the bite of a rattlesnake, nor of his losing any stock from that cause. On the authority of Mr. I. K. Fisher, of Santa Barbara, we state that when a snake has bitten itself it resorts to the remedy which the Indians use, from which we infer that their discovery of the cure arose from observing the snake's employment of the same remedy.

Mr. Frank Smith, of Whitewater, speaks the Indian language, and through that has come into possession of many secrets which

their reticence hides from most white men. From him we learned this remedy, and announce it with the assurance of Mr. Smith's entire responsibility and veracity. Indeed, so confident is he of the power of the remedy that he is willing, in true California eloquence, to wager Dr. Mitchell in any sum from $500 to $1000 that he can cure any case of rattlesnake bite, Dr. Mitchell himself furnishing the snake if he wants to be sure of its venomous character. The remedy is this: There is a weed which grows wherever the rattlesnake lives; it is green during snake season. When a creature is bitten the green weed is bruised in a little urine, the skin about the bite is scarified with a knife, and the bruised weed is rubbed over the scarified place for ten or fifteen minutes. A bunch of the bruised weed is then bound on the scarified surface and left. Within forty-eight hours without fail all symptoms of the poison disappear.

'The weed is a species of Euphorbia common in this country. It is a little, vinelike plant, radiating from a center, usually clinging close to the ground, with a light green round leaf shaped like a clover leaf, but only a half or a third as large. When a stem is broken, milk will drop out profusely. A few pieces of the weed grow just south of where the road leads from San Gorgonio avenue, in Banning, across the vineyard to the company's barn north of town. There just at the edge of the road along the ditch it can be found and recognized.

'Mr. Smith gave us three accounts of this cure:

'1. In 1878 a snake charmer in Prescott, Arizona, was bitten by a rattlesnake on the back of the hand. Ten hours thereafter he was unconscious, his arm and whole side swollen, and the physicians gave him up to die. Mr. Smith then applied his remedy, and the next morning the man was walking the streets well.

'2. In 1862 a Mexican boy was herding sheep in this pass for the Trujillos. He was bitten by a rattlesnake on the forefinger. When seen by Mr. Smith the next day he was swollen enormously all over, 'as big as three boys,' says Mr. Smith, and in great agony. This remedy cured him.

'3. A horse was bitten on the nose. When found its head was swollen, and knots as big as nuts showed down its neck and on its body. It had been bitten several hours, the fang marks showing on its nose. He cured it and rode it fifty miles the third day without injury.

'The Mexicans call this weed golondrino.

'If any one seeing this article knows Dr. S. Wier Mitchell's address, we would be obliged by having him see this article.'

In the first paragraph of the above article reference is made to

the snake using the plant itself in case of its repenting of suicidal intentions. But this is open to doubt and it may be presumed that the snake resorted to the use of the plant for some reason unknown to us. That it is an infallible cure may also be doubted, notwithstanding the numerous cases which have been described to me by different and reliable observers where it proved efficacious in preserving life. In Texas the plant is steeped in fresh milk and the tea given internally in cases where children are bitten by the rattlesnake. In Lower California the plant is first masticated and a portion of the weed then applied to the scarified wound and a part swallowed. In Mexico I am informed that among certain Indian tribes the men carry a little of this herb—dried—on their person constantly and say that where it is promptly applied a snake bite never proves fatal.

All this cumulative evidence is not to be hastily discredited in a matter of so great importance, for, while the mortality from this cause in the United States is not great, yet in India and some portions of tropical America, many thousands annually lose their lives from venomous serpents. If this plant really possesses the qualities ascribed to it its introduction in those countries afflicted in this way would be of lasting benefit to the human race.

It should be borne in mind that the milky juice of the golondrina is in itself poisonous, whether taken internally, or with many individuals, applied externally to the skin. A case of poisoning by this plant was lately brought to my attention. Several ladies and children thoughtlessly ornamented their hats with the pretty clusters of leaves and white flowers, getting the juice on to their hands and faces. In two or three of these individuals the effect was similar to a case of poisoning from the poison oak, while the others were not affected in the least. I have frequently had the milky juice on my hands, when collecting specimens for my herbarium, without any inconvenient results. *C. R. Orcutt.*

YUCCA WHIPPLEI.

(From *Vick's Magazine*, xiv, 211.)

The persistent reader of florists' catalogues will sometimes find the name that heads this article at the tail end of the short list of yuccas. It received its name from the zealous and talented Lieutenant A. W. Whipple, who, in 1853–4, crossed the plains at the head of an exploring expedition of the United States government.

In the early summer one may see the Indians of our San Bernardino valley with bundles of some green vegetable substance

which has been formed into balls of two to four inches in diameter. This substance they eat green, by chewing and extracting the sweet juice and ejecting the white fibrous 'cud' left after the operation, or, to heighten the relish, they roast it over the coals, sometimes merely warming it through. They will tell you this is mesqual (mez-kal). A botanist would tell you that it is Yucca Whipplei. What's in a name after all? Mesqual will taste just as sweet to the uninterested savage. Still earlier in the season you may see little bands of Indians on foot, and mounted on their wretched mustangs, bound for the hills; they are going after mesqual too. They will bring back with them many fibrous, spherical, sticky and dirty looking masses about as large as a cocoanut, fiber and all. If you have courage enough to taste it you will find it quite sweet, and the Indian will tell you it is mesqual, and muy dulce.

When the mesqual is suitable for cooking they gather great quantities of it, at some convenient spot near their camp. They then make a slight depression in the soil, in which a fire is built and maintained for some time, until the ground, and a quantity of stones also, which have been thrown in, become quite hot. When this primitive oven is at the right temperature the mesqual, stripped of its leaves, is thrown in, the embers having been first raked to one side. When a thick layer of mesqual has been placed in the oven, the hot stones, embers, ashes, soil and green grass are thrown over the whole pile and a fire kept burning on top of it; this is kept going till the chief cook deems the mesqual to be thoroughly cooked, when the pile is pulled to pieces and the contents allowed to cool. In taste it has a faint resemblance to a baked sweet apple, and is about of the same consistency. The whole mass is a mixture of this sweet, soft pulp and coarse, white fibers, much like a manilla rope yarn. Care must be taken not to eat much of it, for it has a medicinal effect similar to castor oil, though the Indians do not seem to mind this at all. I am told that the Indians on the desert north of us knead up the fresh-baked mesqual into cakes, and these are dried in the sun for future use. The Agave deserti is also called mesqual, and is cooked the same way, and I have good season to believe several other sorts of agave. In fact I believe that Yucca Whipplei is the only yucca that is used in this manner. Mesqual seems to be the general name for all plants that are prepared as I have stated, hence Whipple's yucca also becomes mesqual, because eatable in this manner.

Should you wander along the sand washes and slopes of the higher parts of our valley you cannot help noticing a curious looking plant growing there in considerable numbers. From an upright

spike, solid and hard, growing directly out of the ground, radiate in every direction long green leaves with sharp spikes at the ends—a hemisphere of rigid, bristling leaves. As the plant approaches maturity, and prepares to bloom, the base broadens and thickens till it has quite a bulbous appearance; when in this condition it is considered eatable by the Indians. Presently the central spike of close-clustering leaves grows taller and thicker, and from the center emerges the flower stalk, very tender and white, with the close-clustered buds so minute as to be scarcely recognizable; at this period of its growth it looks very much like a huge stalk of asparagus. The growth of this flower stalk is exceedingly rapid. The faster it grows the faster the flower buds develop, but it is not till the stalk is some five or six feet high that it begins to branch out from the central stem in every direction, and subdivides again into many smaller stems, each terminating in a perfect flower. When the plant is in full bloom there is a spike of creamy white flowers two feet across and tapering upward three or four feet to the top, where the delicate green buds are not yet open. The flowers are some two inches across, generally of a delicate cream color, or pure white, not infrequently with a line of green or purple down the center of each petal; instances are not rare where the whole flower is of a rich purple color. In texture the flower is thick and waxen looking. This yucca has the peculiarity of dying as soon as it has flowered, like the agaves. *W. F. Parish.*

[Yucca whipplei, common in Southern and Lower California, is better known among the native Californians as the ciote plant (pronounced ke-o-ty), and is also known as the mountain yucca.—Editor.]

NEW BOMBYLIDÆ FROM CALIFORNIA.

In 'Entomologica Americana' Volume I, pages 115 and 116, I gave a synoptical table of the species of Lordotus known to inhabit North America, and characterized three new species. Since the publication of that paper no new species from this region have, to my knowledge, been described. I give below descriptions of two new species which I collected in Southern California, and present a new table of all the known species of Lordotus from North America:

1. Scutellum not grooved, rounded behind..... 2
   Scutellum with a deep, longitudinal groove.....Canalis Coq.
2. Wings hyaline, destitute of brown clouds or spots..... 3
   Wings with apical half of first basal cell (usually), and basal half of marginal and of first submarginal cells brown, a brown cloud on the small crossvein and another on the crossvein at base of fourth posterior cell.....Gibbus Lw.

Wings hyaline except the brown clouds situated mostly on the crossveins.....Planus O. S.

3. Pile of breast and of legs largely white or yellowish..... 4
   Pile of face, antennæ, breast, legs and venter largely black..... .....Apicula Coq.
4. Abdomen destitute of crossbands of white tomentum..... 5
   Abdomen with distinct crossbands of white tomentum..... .....Miscellus Coq.
5. Abdomen destitute of a crossband of black pile..... 6
   Abdomen with a crossband of black pile, costa of wings in the male provided with teeth-like projections.....Zona Coq.
6. Second antennal joint scarcely longer than wide, costa of wings in the male destitute of teeth-like projections, pile of body yellowish-white in both sexes.....Junceus n. sp.
   Second antennal joint nearly twice as long as wide, costa of wings in the male provided with teeth-like projections, pile of body yellowish-white in the male, golden yellow in the female.....Diversus n. sp.

Lordotus junceus n. sp. Black, opaque. Front in the female densely gray pollinose, yellowish and white pilose, covered with minute black points; face in both sexes densely white pilose. First joint of antennæ scarcely two-thirds as long as the third, second joint as wide as long; pile of upper side of first two joints brownish, that on the lower side more dense and white. Pile and tomentum of upper part of occiput in the male wholly yellowish-white, in the female mixed white and yellowish-white, that on remaining part of occiput white. Thorax in the female grayish pollinose and covered with minute black points, in the male the pollen and points are almost wanting; pile and tomentum of thorax mixed white and yellowish-white, mostly of the latter color in the male. Scutellum rounded behind, its covering like that of the thorax. Pile and tomentum of pleura white, of the abdomen yellowish-white, that on the venter white; hind margins of abdominal segments two to five, sometimes yellowish in the female. Pile and tomentum of legs white, bristles of tibiæ and of tarsi black. Wings wholly hyaline, costa in the male destitute of teeth-like projections. Stalk of halteres brown and yellow, the knob sulphur-yellow. Length, 5 to 9 mm. Los Angeles and San Diego counties, California. 6 male and 3 female specimens, in May and June.

Lordotus diversus n. sp. Male black, opaque. Second antennal joint twice as long as wide, but a trifle shorter than the first, the two together about equaling the third in length; base of the third joint yellowish; pile of upper side of first two joints short, sparse, mixed yellow and black, of the lower side yellow, long and dense. Pile of face yellow. Pile and sparse tomentum of occiput, thorax, scutellum and abdomen wholly dirty-white, that on the pleura and

venter purer white. Scutellum rounded behind. Apex of femora, whole of tibiæ and base of tarsi, yellow; pile and tomentum of femora white, tomentum of tibiæ and tarsi yellow, their bristles black. Wings wholly hyaline, the costa beset with large, black teeth-like projections. Stalk of halteres yellowish, the knob white. Female differs from the male as follows: First two antennal joints yellow, their pile wholly golden yellow. Pile and tomentum of front, face, occiput, thorax, scutellum, abdomen, pleura and venter golden yellow. Femora wholly yellow, its pile and tomentum yellowish. Length, 6.5 to 10.5 mm., the males, on an average, the largest. San Diego county, California. 4 male and 9 female specimens, in May.

These two forms, although differing so much in coloration, are evidently the opposite sexes of the same species. I collected specimens of both forms at the same time and place, and did not take at the same time a single specimen of any other species of Lordotus having the same form of second antennal joint as both of these forms possess.

In the same volume of the periodical above referred to, on pages 221 and 222, I gave a table of the known species of Toxophora occurring in North America, and described two new species; I give below a description of another new species, which makes it necessary to somewhat modify and extend the previously published table of species, as follows:

1. Wings with three submarginal cells..... 2
   Wings with only two submarginal cells; crossvein at apex of discal cell not angular, destitute of a stump of a vein..... .....Leucopyga Wied.
2. Crossvein at apex of discal cell angular, and bearing a stump of a vein..... 3
   Crossvein at apex of discal cell not angular, destitute of a stump of a vein..... 4
3. Wings hyaline, the costal half only slightly yellowish..... .....Pellucida Coq.
   Wings smoky-brown, the costal half darker brown..... .....Amphitea Walk.
4. Abdomen with a row of black tomentose spots each side of the middle..... 5
   Abdomen with a black tomentose stripe each side of the middle.....Virgata O. S.
5. With seven spots in each of these rows.....Maxima Coq.
   With only three spots in each of these rows.....Vasta n. sp.

Toxophora vasta n. sp. Black. Tomentum of front and of face white, cheeks whitish pollinose. Tomentum of first two antennal joints white and black, the second joint densely silvery-white pollinose on the inner side in the male; third joint one and

three-fourths times as long as the second, tapering gradually to the tip, the apical portion not bristle-like. Proboscis reaches apex of second antennal joint. Pile and tomentum of occiput, thorax and scutellum yellowish-white, bristles of the two latter black. Tomentum of abdomen white, that at the base yellowish, a transverse spot of black tomentum each side of the middle on bases of the second, third and fourth segments; tomentum of venter, femora and tibiæ white, that on front side of anterior and middle femora partly black; spines of tibiæ black; hind femora in the male each with three stout black bristles on the under side near the base; tomentum of tarsi black. Wings wholly hyaline, vein at apex of discal cell evenly curved and destitute of a stump of a vein; small crossvein at last third of the discal cell. Stalk of halteres yellowish-brown, the knob sulphur-yellow. Length, 5 to 11 mm. San Diego county, California. 6 male and 11 female specimens, in May.

D. W. Coquillett.

THE THISTLE POPPIES.

(From the *American Garden*, xii. 54.)

The Papaveraceæ or Poppy family furnishes many beautiful flowers for us to cultivate and admire. The order includes near twenty genera, of which nine or ten are represented in California. Among these genera is Argemone, a genus of some six or eight species of free-flowering border plants, with large, showy, white or yellow short-pedicelled flowers. They are stout, glaucescent hardy annuals, with sinuately pinnatified, prickly-toothed leaves, from which they have become known as thistle-poppies.

Argemone grandiflora is described as 'growing two feet in height, and producing numerous large white flowers.'

Argemone Mexicana, a native of Texas and Mexico, grows to about the same height, and produces conspicuous yellow flowers in profusion. As a weed, this plant 'has spread to almost all warm countries,' but I believe it has not as yet been recorded from California. The leaves are blotched with white and less hispid than in the following species.

Argemone hispida, the chicalote or thistle poppy of Southern California, in the beauty of its flowers almost rivals the magnificent Romneya Coulteri. It forms an erect branching bush, one to three feet or more in height, producing a profusion of its large, pure white flowers, closely set among pale green, bristly-armed leaves.

The large white flowers render it very conspicuous on a lawn, by day or night, but the delicate texture of its petals, and unpleas-

antly hispid character of its stems and foliage, will not render it a favorite with florists.

When seen growing luxuriantly on its native, dry and otherwise almost barren hillsides in California, or in equally dry valleys, its beauty is not likely to be easily overlooked. It extends eastward through Colorado and New Mexico, and has gained a permanent place in the catalogues of American seedsmen.

PTELEA APTERA.

(From *Garden and Forest*, iii. 332.)

This plant, a native of Lower California, is interesting from the structure of the fruit, which differs from that of the other species of this small North American genus. In other Pteleas the indehiscent fruit is surrounded by a broad reticulate-veined wing, while in Ptelea aptera it is turgid, nut-like and glandular, and quite wingless, or with a narrow rudimentary wing only.

Ptelea aptera is a densely branched, pungently aromatic shrub, with slender stems growing to a height of five to fifteen feet and forming dense clusters. It is quite similar in habit and in general appearance to the common Ptelea angustifolia of the southern and southwestern States, and, except for the fruit, might be almost mistaken for that species.

The fruit is broadly ovate, lenticular, and slightly keeled; it is wingless or nearly so, a quarter to half an inch long, and a quarter of an inch broad; slightly emarginate at the base, tipped with the remnants of the persistent stigmas, and conspicuously glandular. It is two or rarely three-celled [more rarely four-celled]. The seeds are oblong and corrugated, with a shining black testa.

Ptelea aptera was discovered in January, 1883, on dry gravelly slopes near the shore at Punta Banda, at the southern end of Todos Santos Bay, by a party of botanists under the leadership of the late Dr. C. C. Parry. Flowers and remnants of the fruit of the preceding year were found at this time. Dr. Parry read an excellent account of the plant with diagnostic characters before the Davenport Academy of Sciences in December, 1883. This was afterward published in the proceedings of the society (iv., 39), the ripe fruit, in the meantime, having been collected by Mr. C. R. Orcutt, of San Diego. *Charles S. Sargent.*

Moss Eng. Co. N.

THE OLIVE.

The Olive tree (Olea Europea) forms the basis of one of the oldest industries in West America. The oldest olive trees planted in the United States are those at the mission of San Diego, California. These are credited with an age exceeding one hundred years and are still in good bearing condition, notwithstanding the ill-usage to which they have been subjected.

The accompanying view of these trees is of historic interest, and is taken from a report of the secretary of the California state board of horticulture. The variety planted at the old Californian missions is the one which has until late years been planted almost exclusively, and is still favorably known as the Mission olive. Other varieties have of late years been tried in Southern California with variable success. Horticultural varieties are as numerous in the olive as in the peach or apple, over a hundred named forms having been described under a perplexing nomenclature.

In the Alpes Maritimes, a province in France, we learn from a special consular report that the olive covers 70,000 acres in that province, yielding an annual income of $2,000,000—the only revenue of many families.

The olive prospers in calcareous or gravelly or dry soils where no vegetable or cereal crop could be obtained.

In Lower California the olive comes into bearing at seven years. In more northern or cooler climates, ten to twelve years is the usual time for the tree to arrive at maturity. It remains fruitful for centuries, and a tree in Europe, near Nice, was famous for its old age in 1515, and measures forty-two feet in circumference. The average yield of this tree at present is nearly 320 pounds of oil per year. A well cultivated olive tree will easily yield fifteen gallons of oil, or about 1500 gallons per acre, if planted 100 trees to the acre; but in Europe a less number is usually planted, more seldom even as many as 75 trees to the acre.

For oil the fruit is picked about a month before ripe, but for pickling for table use they are gathered when fully ripe usually.

The northern limit of the olive for fruiting is believed to be near 42° north latitude, on the Pacific coast, but it may be grown farther northward as an ornamental tree, blossoming but not maturing fruit. It is a handsome forest tree, well adapted for hillsides too sterile for scarcely anything else of value to thrive. Lands once abandoned for sterility in Africa and portions of Southern Europe are now a source of wealth, and thousands of acres of arid lands

in the west, may likewise be made to yield a revenue at no distant period sufficient for the needs of large communities.

The best varieties, culture, pickling, and manufacture of olive oil, will be the subjects of future papers. *C. R. Orcutt.*

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

SAN FRANCISCO MICROSCOPICAL SOCIETY, June 4, 1891.

The society celebrated its twenty-first anniversary at its new rooms, 432 Montgomery street, June 17, 1891. The cabinet was enriched by a quantity of diatomaceous earth, very rich in fossil diatoms, found near Lompoc, Santa Barbara county, presented by Henry G. Hanks. Henry C. Hyde presented a caterpillar from New Zealand, with a curious fungus grown from the head. The caterpillar is known by the common name of the 'bulrush caterpillar,' and to science as Sphœria Robertsia. The natives, however, call it 'aweto.' The plant, or fungus, in every case fills the body of the caterpillar, which in well-grown specimens reaches a length of three and a half inches. The fungus rises from the head and attains a length of six to ten inches. When found the body of the caterpillar is buried beneath the surface of the soil or leaf-mold, and the greater portion of the stalk as well. The apex of the plant, when in fructification, resembles the club-headed bulrush. There is every probability that the seeds or spores of the plant find a lodgment in the folds of the caterpillar's skin, where the temperature and moisture soon cause them to germinate, and the growth soon causes the death of the animal, its tissues supplying food for the plant.

William Norris presented to the society two photographs of diatoms, made by B. W. Thomas of Chicago, one a species of Eunotia from Ellensburgh, Washington, and the other a species of Asterolampra from Fisherman's Cove, California. This latter, Mr. Thomas writes, seems to be a new species, as it does not conform to the known species of that genus.

The paper of the evening was read by Harold Sidebotham, M. R. C. S., L. R. C. P., late of London, on the subject of 'Cell Division.' He alluded to the various theories held at different times by biologists on this subject, illustrating the same by drawings on the blackboard. The later and more general accepted theories were also fully exemplified. A series of carefully stained preparations showed the various stages of the animal cell, and it was remarked that his staining of the extremely delicate tissues of the infusorian, Paramecium, were worthy of more than passing notice.

Dr. Gray read a paper on the anatomy of the insect trachea, largely made up of references to the early literature of the subject.

July 1, 1891, C. W. Woodworth, of the Agricultural Experiment Station at Berkeley, was present and exhibited some slides, showing the scale insect infesting the leaves of the olive. He called attention to the fact that certain closely allied species of scale insect were invested with an outer covering produced by exuvia, or by hardening of the skin, while in the species under consideration this outer covering seemed almost entirely composed of the stellate hairs accumulated from the under side of the leaf of the olive on which it feeds. As the larva grows it insinuates itself beneath these stellate hairs, which become broken from the leaf and attached to the skin of the developing insect. Mr. Woodworth exhibited two slides last evening, one the young larval skin, of about one-fourth the adult size, and the other the complete adult form.

Henry G. Hanks was present and exhibited some curious so-called lava, recently obtained from Butte county. In November last Mr. Hanks read a paper before this society on 'Certain Magnetic Rocks,' in which he assumed that the rocks at Tueson were nearly identical with the Table Mountain capping, which overlies the deep good placers of this State, protecting them from denudation and dispersion. During a recent visit to Butte county for the study of this formation he made two important discoveries bearing on this subject, which at least afford strong evidence in favor of the opinion stated in the paper referred to, that the rocks were not of igneous, but of aqueous origin.

The first discovery was at the mouth of Chico canyon, where William Proud showed him some cylindrical natural tubes in the so-called lava, which Mr. Hanks believes to be solfataric steam pipes. These varied from the size of a quill to three inches or more, and some of them are at least four feet deep. They are not rare, but common, and it is believed may be found elsewhere. The inference drawn from this discovery is that these rocks, supposed to be igneous, are really overflows of solfataric mud; otherwise it would be impossible to account for the steam pipes, for the rock must have been at one time soft and permeable.

The second discovery was a fragment of the same rock obtained from Mrs. Caroline H. Church of the Aurora drift mine, near Magalia, in which there is a cast of a pine cone, so perfect that when liquid plaster of paris is poured in a model of a cone is obtained showing every detail of structure. Mr Hanks has examined the cast closely with the microscope, and could find no trace of charcoal. Nor can it be possible that the rock was hot, for had the cone

been burned the fine striations could not have been so perfectly preserved It is Mr. Hank's intention to study these rocks microscopically and report to the society the results of his further researches.

In view of the prominence given to the question of the discovery of the microscope, and the celebration of the three hundreth anniversary soon to take place in Antwerp, Mr. Riedy exhibited an old book by Petro Barrello, published at The Hague in 1655, entitled 'A History of the Telescope and Microscope.' This old book is remarkable as being the first published work treating of the discovery.

William E. Loy, Recording Secretary.

QUESTIONS OF NOMENCLATURE.

(From *Science*, xvii. 67.)

Professor C. S. Sargent, author of the 'Silva of North America,' says, in the first volume of that work, 'I have adopted the method which imposes upon a plant the oldest generic name applied to it by Linnæus in the first edition of the 'Genera Plantarum,' published in 1737, or by any subsequent author, and the oldest specific name used by Linnæus in the first edition of 'Species Plantarum,' published in 1753, or by any subsequent author, without regard to the fact that such a specific name may have been associated at first with a generic name improperly employed.'

To secure stability in nomenclature, it is obvious that the method adopted by Professor Sargent is the one which should universally be adopted by botanists. Other questions relating to botanical nomenclature are not so well settled as might be desired, and a few of these may be briefly stated, with the writer's present views concerning them.

The first in importance, perhaps, is the use of the names of forms at first described as varieties of other species, and later raised to specific rank, or vice versa. It would seem that the varietal name as first used should be adopted for the specific name when raised to specific rank, though many botanists have felt at liberty to rechristen them at pleasure. A varietal or subspecific name would, if this rule were followed, receive precedence over later names. Professor E. L. Greene, in 'West American Oaks,' has adopted the name Quercus Palmeri Engelm. in preference to Q. Dunnii Kell., although first published as a species under the latter name, Q. Palmeri having first been published as a subspecies by Dr. Engelmann, and later as a species. One is led to infer by Professor Greene's remarks, that, had Q. Palmeri been published as a variety instead of as a subspecies, he

would have adopted Kellogg's name for the species, though why such a distinction is made is not very evident.

Bentham, in fact, held that the earliest published name, whether applied as a specific or varietal, belonged inalienably to that individual form, whether subsequently redescribed and raised to specific, or degraded to varietal rank.

'Once a synonyme always a synonyme,' is a rule which I believe obtains among zoologists in general, and should, if tenable with them, be adopted by botanists as well. This would necessitate some important changes if adopted; and as an instance may be noted the name Washingtonia, now in use for our Californian fan palms, a synonym of Sequoia, having been unfortunately applied to our Californian giant before its application by Wendland to our palm.

If the facts permitted, some enterprising botanist might see fit to reinstate the coniferous genus, in which case the genus of palms would of necessity have to be renamed. Still, it seems like creating needless synonymy in this case to rechristen Wendland's genus, though strict adherence to the rule would render it imperative.

Uniformity in the method of citing the authors of species is another desideratum in botanical nomenclature. The most explicit custom is that adopted in general by zoologists,—the enclosing in parentheses the name of the author of the species or variety, where originally given wrong rank, or referred to a genus incorrectly. While this is often cumbersome, yet it greatly facilitates subsequent work beyond question, and is preferable to the citing of the name of the author who has referred the plant in question to a different genus, or considered it as of different rank. The existing confusion in the manner of citations renders it impossible for a writer to do strict justice to the founders of species, unless he is favored with access to large botanical libraries, and blessed with abundant leisure for consulting original descriptions. The author of the species (or variety), it seems to the writer, is the one to be cited (if the system of double citation is discarded as inconvenient) in preference to the authority for its transference from one genus to another.

Another point upon which botanists are not fully agreed is the citation of names adopted in manuscripts or herbaria, and receiving earliest publication by others than their authors. It is the custom in America (and a sensible custom it is) to cite the real author's name, even when first described and published by another author (unless published by that author as of his own authorship). Thus, Nuttall is credited with the authorship of many genera and species

first described by Torrey & Gray in the 'Synoptical Flora,' or by DeCandolle or others elsewhere.

It is now generally conceded that an author, after publishing a name, has no longer any right to substitute another name therefor in subsequent publications, even though the first name he finds to be a misnomer. This right, claimed by many of the older botanists of a past generation, is no longer contended for. It is also an open question as to how far published names may be changed or corrected by their own or subsequent authors.

A common Californian cactus is published by Prince Salm in 'Cacteæ Horto Dyckensi,' p. 91, as Mamillara Goodrichii Scheer, named in honor of Mr. Goodrich. Professor Sereno Watson informs me that Seeman says in the Botany of the '*Herald*' that it was a 'Mr. J. Goodridge, surgeon,' whom the plant was intended to commemorate in its name as its discoverer. The name, therefore, has been written M. Goodridgii by many subsequent authors. Gray (*Botanical Gazette*, ix. 53) inadvertently publishes Antirrhinum Nivenianum, and repeats this spelling on the following passage. This was collected by Rev. J. C. Nevin, and it is obviously proper to write A. Nevinianum, as the former spelling was mere inadvertence or a typographical error. But in the instance of Mamillaria Goodrichii, as originally written there is less cause for change, since the man may not have been clear in his own mind as to the correct spelling of his name,—like Shakspeare, spelling it differently at different times. *C. R. Orcutt.*

ŒNOTHERA OVATA.

(From *Garden and Forest*, iv. 285.)

There is a glowing California field flower that possesses many charms, and well deserves introduction to the garden. In its season this lovely California Œnothera, with its dwarf growth and compact clusters of golden bloom, appears as distinct and as striking a feature of the landscape as the great flame-red Eschscholtzias.

The other day—it was May 10th—I walked up the long seaward slopes of Berkeley. Every vacant lot and the very streets were golden with little plats of shining blossoms. I began to remember that for three or four months this brilliant display continues. I counted the flowers and yet unopened buds on the nearest plant. The circle of its outer leaves was about a foot in diameter; they rested upon the turf, hardly rising four inches above it at any point. Fifteen open flowers rose well above the foliage, and no less than thirty-six buds could be counted without pulling the crown

apart and descending to the microscopic sizes. Each of the four-petaled flowers was fully as large as a fifty-cent piece; one almost covered a silver dollar. The rich, clear yellow hue, and the regularity of the petals and stamens, with the golden ball of the erect pistils, formed a charming whole. *Charles Howard Shinn.*

SOME USEFUL PLANTS OF SOUTHERN CALIFORNIA.

(From *Garden and Forest*, i, 414.)

Romneya Coulteri.—Few will ask why this magnificent flower was made, after once seeing it in full bloom—for the delight of their eyes will satisfy them. The Romneya poppy is one of the most regal of our native flowers, and no flower yet introduced in our gardens excels it. Growing along the water courses on our southern border, southward to near San Quintin bay, in Lower California, it wastes its sweetness and pure white loveliness unseen and unknown, except by a few. The wax-like flowers often exceed six inches across, the white petals set off to advantage by a center of golden stamens. The stems grow from four to fifteen feet in height, rising above the surrounding brush, and when seen covering large areas and in full bloom the plant is not readily forgotten. Not content to occupy the fertile valleys, it seeks the more secluded canyons as well, and often dots the hillsides, climbing far up the mountain-sides away from the reach of any but the most enthusiastic botanists. It seems to delight in these high, sterile locations, where it is thoroughly protected from the winds and is not likely to be disturbed. In cultivation the flowers become much larger and more wax-like, and it has been in demand in Europe, where it was very early introduced. In addition to its horticultural attractions it possesses strong qualities of great medicinal value, which may secure for it a place in the materia medica when they are more fully investigated. It has long occupied a place among the medicinal herbs of the Indians of Lower California.

Simmondsia Californica.—This is a very common shrub in the southern part of the State, extending southward in the peninsula of Lower California. It was found by Dr. Veatch, on Cerros island, and was figured from that locality in one of the bulletins of the California Academy of Sciences. It forms low, oval bushes along the sea coast, often less than a foot in height when exposed to the ocean winds, and with its stiff leaves and branches and dense foliage forms impenetrable thickets in less exposed situations. The foliage is of a glaucous hue, blending harmoniously with the reddish

soil on our hills and mesas, and in sharp contrast with the dark, olive-green foliage of the common Rhus, with which it is often associated. It rarely attains a height of fifteen feet, with a trunk diameter of four or five inches. Sometimes one standing alone forms a very symmetrically shaped tree, but it usually forms an oval mass with its dense foliage. The Simmondsia, as an ornamental shrub, is likely to meet with popular favor. Growing in fertile valleys and on barren hills, along exposed sea-cliffs and on the brink of the great Colorado desert, and equally tenacious of life whether in a situation of perpetual summer or where exposed to the snows of winter, it may be presumed that it will prove both hardy and easy of cultivation. The Simmondsia is a prolific bearer of an edible nut resembling an acorn both in size and shape. The resemblance is still further increased by the persistent calyx which forms a cup for the fruit. When ripe the outer envelope splits open and liberates the nut or nuts enclosed. They have a pleasant nutty flavor, and I have frequently enjoyed eating them without any injurious effects. I am not aware that they were eaten by the Indians, but probably they formed an important article of food with them.

PRUNUS ILICIFOLIA.—The Oak-leaf cherry is one of the characteristic shrubs of San Diego county, and might, with nearly equal appropriateness, be termed the Holly-leaved cherry, as the foliage is somewhat between that of our shrub oaks and the holly. It is not rare both near the sea coast and on the higher mountains bordering the sterile Colorado basin, and some seasons it proves to be a very prolific bearer. Near the coast, I think it is oftener barren than in the interior, but it grows rather more luxuriantly in some of the sheltered and fertile canyons near the ocean. As an ornamental shrub it is highly appreciated, especially for hedges, and is extensively planted for that purpose near Los Angeles, I am informed. The glossy, dark evergreen foliage is always pleasing, and its dense, prickly character is an excellent feature. The fruit is of a dull crimson when mature, oval in shape, often rather blunt at the ends, and an inch in length. A bush loaded with the fruit is a tempting sight, but it is rather aggravating to find the pulp scarce an eighth of an inch thick. The stone forms the larger part of the fruit; but it is still worthy of notice, and finds its champions among our country people, who calmly state that they prefer it to the grape! A basketful may be quickly gathered at the proper time (September and early October) if the season has been favorable, and possibly were not other fruits so abundant it might become of use for the table. I think I have seen it stated that the experiment of grafting cultivated cherries on to this species has proved a success. If true, it

certainly is of great value for cultivation where it would be difficult to make other trees or shrubs grow successfully. Had we an agricultural experiment station in this section of the state it would be a proper subject to investigate. *C. R. Orcutt.*

NUTS OF COMMERCE.

(From the *American Agriculturist*, l. 337.)

The Liche nut is an interesting Chinese production, probably first introduced into this country by immigrants from China, but now to be found on sale at many of our fruit stores. The nuts have a delicate russet-colored shell, more easily broken than the soft-shell almond, inclosing a rich-flavored, date-like pulp, surrounding a smooth seed with irregular depressions and about the size of a date stone; hence the name of 'Chinese dates' sometimes given these nuts. No information in regard to their cultivation is obtainable, but they could, no doubt, be raised in certain localities in this country, and probably yield profitable crops.

Some American plants seem to thrive better away from home than in their native land, and so what we have been accustomed to call the English or European walnut (Juglans regia) is now grown in the greatest perfection and over a very wide range of territory in this country. This nut flourishes and bears annual crops as far north as Narragansett Bay on the Atlantic Coast, but, like most fruits which require a long season, it reaches its greatest perfection in an equable and medium temperature, that allows of a steady, uniform growth, such as it secures on the Pacific Coast and in some of our Southern States. Under such conditions the shells are thinner, the nuts larger, smoother, and better filled than elsewhere.

As an illustration of the influence of popular taste, we may say that a variety of the English filbert, which is much larger than our native hazelnut, sells better when offered in the husks. There seems to be no good reason for it except that it is supposed to be an English custom to serve them in this form. Other varieties of the filbert and nuts in general are usually most carefully divested of their outer coverings, assorted to uniform sizes, and even polished and oiled to give them an attractive appearance.

Cashew nuts are brought from the West Indies, and may, perhaps, thrive in some of the warmer parts of the Pacific Coast. The cashew tree bears an edible fruit, from which hangs the smooth and curiously-shaped nut. The kernel or meat is very palatable, while the surrounding skin is bitter and astringent.

There is a steady but not a large demand for pistachia nuts, best

known to Americans from the beautiful green color which they impart to ices and confectionery. They are much used by oriental nations. Most of the pistachia nuts used in Europe and America are grown on the shores of the Mediterranean, and although slightly larger it is said that they are not equal in flavor to the smaller native variety brought from Persia. The nuts are covered with a delicate husk, which rubs off, and is blotched with brilliant red and purple, while the kernel is bright green. These nuts grow in clusters on small trees.

No description of the common peanut is necessary, but there are occasionally new varieties introduced worthy of some attention as, for instance, the so-called Spanish peanut, although raised in Virginia. The kernels are rounder and more delicate than those of the common variety, consequently more highly esteemed by confectioners; but the habitual 'peanut eaters' like the others best. Cuba peanuts are occasionally seen in our markets, and they are three or four times as large as the home-grown, and of a reddish color, supposed to be due to the reddish soil in which they are grown.

The so-called Chinese chestnut (Trapa) is not a chestnut at all, but the seed of an aquatic plant found in swamps and ponds. The nuts have a curious resemblance to the horns of cattle, and are of a dark brown or black color, but filled with a white, sweet meat or kernel. They are imported and sold in this country as curiosities, and not for eating. When fresh, or not too dry, they may be sprouted by placing them in a jar of water, but they have rarely been cultivated here, although it is said that they are grown in France. Street venders often have these nuts for sale, with a sprig of watercress—which somewhat resembles the true leaves—stuck into them for the purpose of deceiving purchasers.

The following named nuts are also worthy of consideration, and some of them if not all may prove to be of considerable value. The Japan chestnut is said to be as large as the Spanish, and some persons claim that it is as sweet as the American. It has not as yet appeared in our markets, although many nurserymen offer the trees for sale. They come into bearing when quite young, and the trees are said to be quite as hardy as the American chestnut.

The extensive use of nuts by cooks and caterers has given rise to a new branch of trade; that is shelled nuts, and now nearly all kinds can be bought shelled and ready for use. The shelled kernels, if kept in tight glass jars, do not deteriorate in flavor, and in some cases, as in that of the black walnut (Juglans nigra), it is claimed that they keep much longer and better than in the shells. The

white walnut or butternut is a greater favorite than the black walnut, the latter having a strong flavor not generally relished.

Salted and well-roasted almonds are now considered almost indispensable among the accessories of a well served dinner in our larger cities. Hazelnuts, walnuts, and often other kinds, are served in the same way, but the almond is the general favorite. The Texas pecan-nut is exceedingly popular, and the trade in this nut is now immense, although it was scarcely known commercially twenty years ago. The trees which produce these nuts were in years past cut down for firewood, or even to get a bag of nuts, but they are now carefully preserved, and not only the old trees cherished, but new ones planted in large numbers, and yet the demand for pecans is far ahead of the supply. The kernels or meat of the pecan is highly valued by confectioners, and in no form are they better liked than in 'plarines,' a Mexican confection made by dropping the shelled kernels into melted sugar, clean brown and unrefined, as it is found at its best on Southern plantations. An enterprising confectioner has taken out a patent for their manufacture, and is said to be doing a flourishing business.

THE STRAWBERRY GUAVA.

(From the *American Agriculturist*, I. 341.)

The Cattley Guava (Psidium Cattleyanum), better known as the strawberry guava, is rapidly gaining in popular favor throughout Florida and Southern California, and has been highly recommended for cultivation in Arizona and New Mexico. It is unquestionably the most desirable and useful of the many varieties of fruits known under the name of guava. It is a shrub or small tree that adapts itself to a dwarfish habit when grown in the house in cold climates, but in a congenial clime attains a maximum growth of fifteen to twenty feet in height, of compact form, and with dense, glossy evergreen foliage, which makes it a very ornamental tree, especially when loaded with its rich colored fruit.

It produces early, bearing fruit when less than a year old, and producing in abundance at two and three years. Every branch will be heavily loaded with the luscious ripe fruit, green fruit in various stages of growth, together with ever present clusters of fragrant flowers. The thick, dark green leaves protect the fruit partially from the sun, but at a temperature of 140° F. there is a tendency to burn. It is called hardy in England, but requires protection in the northern United States, where it is gaining in favor as an ornamental greenhouse plant. The fruit is of a dark red or purplish

ruby red color in the common variety, but a highly valued form as yet rare in cultivation has fruit of a delicate shade of yellow. The red variety will probably always be first choice with growers, however. It varies from one to two inches in diameter, is of firm texture, capable of bearing transportation well, and always meets with a ready sale, either for table use in its fresh state, or for the manufacture of delicately flavored jelly.

It can be made to produce its fruit the year round. It is a naturally heavy bearer, and the fruit may be found in the market for fully six months out of the twelve. When loaded with its tempting fruit thickly set among its glossy dark green leaves it forms a striking and beautiful object, especially if pot grown and dwarfed in habit; but to be fully appreciated it should be seen as planted out in orchards and groves in sub-tropical regions where soil and other conditions are favorable. *C. R. Orcutt.*

CAMASSIA ESCULENTA.

Quamash or Camass of the Indians is common throughout the northern Rocky Mountains and on the Pacific Coast. In the early spring the handsome violet blue flowers may be found dotted thickly over hundreds of acres of mountain meadows, resplendent in all their native beauty.

The flowers are borne on a straight stem, one or two feet high, and each of the numerous flowers is an inch or more in diameter. The narrow leaves, sent out from the large onion-like bulb in early spring, are about a foot long. The bulb is edible, and once formed an important article of food among the Indians, who would gather the bulbs just after flowering and dry them for winter use. After the bulbs are dried, by sun or fire, they are beaten into a flour or paste and more thoroughly dried for longer preservation. The plant is quite hardy, and extensively cultivated in Europe on account of its showy hyacinth-like spikes of flowers, which should be more familiar in American gardens.

PÆONIAS.

The genus Pæonia contains several oriental species or varieties in common cultivation for their ornamental flowers. The Pæony is a coarse perennial plant, and has two representatives on the Pacific coast.

Pæonia Brownii.—This species inhabits the subalpine regions of the snowy mountains, from middle California northward through Oregon and Washington, flowering in June and July, often near

banks of melting snow, according to Prof. Greene (*Garden and Forest*, iii, 356). Herbage glabrous and glaucous. The dull, dark red petals scarcely larger than the green sepals, thick and leathery in both species.

PÆONIA CALIFORNICA.—Restricted in its distribution (Greene, l. c.), to Southern and Lower California. 'Glabrous but not glaucous; leaves twice or thrice as large, of rounded and pedate general outline.' The northern plant I have not seen. The southern form (both are considered as belonging to one species by many botanists) is without floral beauty, though the luxuriant foliage makes it useful in some situations. Grows in dry, rocky soil, from a few hundred, to two or three thousand feet altitude, where it is subjected to a light fall of snow in winter. *C. R. Orcutt.*

NOTES AND NEWS.

A colored portrait of Lathyrus splendens appears in *Vick's Magazine* for July, 1891.

One who has had experience in the care of caged birds and gold fish writes: Never give anything greasy or salt to birds or fish. I give seeds and bread, apple and baked potato to my birds, and to the gold fish, angle worms, raw beef, baked potato and a kind of bread made of eggs and flour, without salt, the same that is best for birds.

The poisoning of plants having proved ineffectual has been entirely abandoned at the Gray herbarium. The tightness of cases and the handling of sheets are relied upon to preserve the specimens. Any which become infested may be treated to a stay in CS_2 vapor, or some other insecticide.—*Botanical Gazette.*

Meehan's Monthly, conducted by the veteran horticulturist, Thomas Meehan, contains in its first issue a handsome colored sketch of Rhododendron maximum.

LIBRARY CATALOGUE.

(Scientific books and periodicals may be ordered through our Book and Subscription Department.)

Recent accessions to the library of the West American Museum of Nature and Art will be catalogued monthly.

4096. Taxidermy and Zoological Collecting. A complete handbook for the amateur taxidermist, collector, osteologist, museum builder, sportsman, and traveller. By Wm. T. Hornaday. With chapters on collecting and preserving insects, by W. J. Holland.

Illustrated by C. B. Hudson and other artists. New York: Charles Scribner's sons. 1891. 362 octavo pages. Price, $2.50 net

A book that will be especially useful to an amateur, and one worthy of a place in every working naturalists' library.

4097. Report upon United States Geographical Surveys west of the one hundredth meridian, in charge of Capt. Geo. M. Wheeler,. Vol. I. Geographical report. 1889. From the Chief of Engineers' U. S. A.

4098. The Natural history of folk-lore. By Otis T. Mason. From the Jour of Am. Folk-Lore, iv. 97-105. From the author.

4099. A provisional host-index of the fungi of the United States. By W. G. Farlow, and A. B. Seymour. Part III. June, 1891. From the authors.

4100. New California fishes. By Mrs. R. S. Eigenmann. Extract *Amer. Naturalist*, February, 1891. From the author.

A new genus (Perkinsia), and several species are described.

4101. Subalpine mollusca of the Sierra Nevada. By W. J. Raymond. Additional notes and descriptions of new species. By J. G. Cooper. Extract Proc. Cal. Acad. II. iii. 61-91. From Dr. Cooper.

4102. Fresh water mollusca of San Francisco county. By. J. G. Cooper. Reprint from Zoe, i, 196-97. From the author.

4103. Agricultural experiment Station, Auburn, Alabama. Bulletin No. 25 (new series): Effects on butter by feeding cotton seed and cotton seed meal.

4104. Same. No. 26. Commercial fertilizers.

4105. Same. No. 27. Black rust of cotton.

4106. Agricultural experiment station, Cornell University, Ithaca, N. Y. Bulletin No. 1. Experimental dairy house.

4107. Same, No. 3: The insectary; on preventing the ravages of wire worms; on the destruction of the plum curculio by poisons.

4108. Same, No. 6: On the determination of hygroscopic water in air-dried fodders; the determination of nitrogen by the azotometic treatment of the solution resulting from the Kjeldahl digestion; fodders and feeding stuffs.

4109. Same, No. 12: A new apparatus for drying substances in hydrogen and for the extraction of fat.

4110. Same, No. 13: On the deterioration of farmyard manure by leaching and fermentation; on the effect of a grain ration for cows at pasture.

4111. Same, No. 27; The production and care of farmyard manures.

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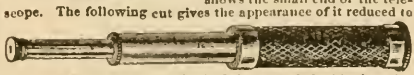

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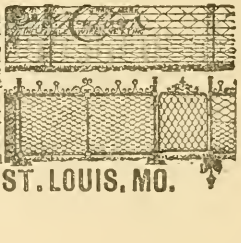

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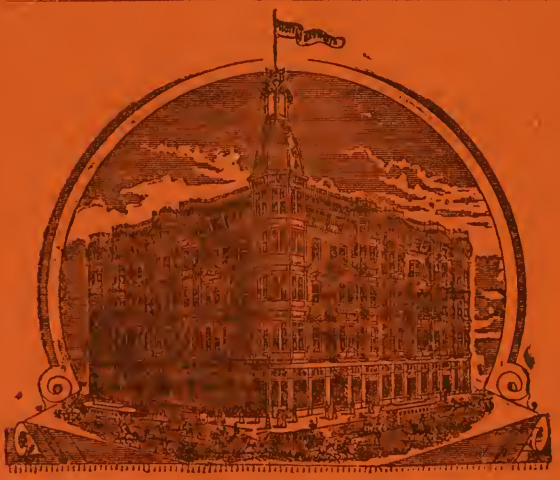

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